

013 It is still another object of the present invention to provide a wafer lifter for self-centering a wafer on a pedestal situated in a physical vapor deposition chamber by utilizing a modified hoop equipped with improved support fingers.

014 It is yet another object of the present invention to provide a method for self-centering a wafer on a wafer pedestal by utilizing a modified wafer lifter equipped with improved wafer support fingers.

Summary of the Invention

015 In accordance with the present invention, an apparatus and a method for self-centering a wafer on a wafer pedestal in a physical vapor deposition chamber are provided.

016 In a preferred embodiment, a wafer lifter for self-centering a wafer on a pedestal may be provided which includes a lifter body of annular shape that has a center cavity with a diameter that is larger than a diameter of the wafer pedestal; at least four support fingers emanating upwardly from the lifter body and are spaced-apart from each other; and a platform on a tip portion of each of the at least four support fingers defined by a

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surface slanted from a vertical plane of an outside surface of the support finger; the platform, when supporting a wafer thereon, leaves substantially no gap between the slanted surface and an outer periphery of the wafer.

017 In the wafer lifter for self-centering a wafer onto a wafer pedestal, the platform may be defined by a slanted shoulder portion of the support finger. A base of the slanted shoulder portion of the support finger defines a diameter of a circular area surrounded by the platforms of the at least four support fingers which is not larger than a diameter of the wafer when measured at 23°C. The at least four support fingers may be substantially equally spaced-apart from each other. The platform, when supporting a wafer thereon may leave a gap smaller than 0.5 mm between the slanted surface and the outer periphery of the wafer. The lifter body may be fabricated of a material that has a rigidity of at least that of aluminum. The lifter body may be equipped with four support fingers emanating upwardly from the body, or the four support fingers may be emanating upwardly at a 90° angle from the body. The lifter body may have a ring shape.

018 The present invention is further directed to a method for self-centering a wafer on a wafer pedestal which can be carried out by the operating steps of first providing a wafer lifter that includes a lifter body of annular shape that has a center cavity with a diameter that is larger than a diameter of the wafer pedestal, at least four support fingers emanating upwardly from the lifter body and are spaced-apart from each other, and a platform on a tip portion of each of the at least four support fingers defined by a slanted surface from a vertical plane of an outside surface of the support finger, the platform when supporting a wafer thereon leaves no gap between the slanted surface and an outer periphery of the wafer; positioning a wafer on the wafer lifter supported by the platform on the tip portion of the at least four support fingers; and lifting the wafer lifter to a position over the wafer pedestal and depositing the wafer onto the pedestal.

019 The method for self-centering a wafer on a wafer pedestal may further include the step, after the lifting step, of lowering the wafer lifter to deposit the wafer onto the wafer pedestal, or the step of sputter depositing a metal layer on a top surface of the wafer. The method may further include the step of self-centering the wafer on the wafer lifter during the positioning step